

REMARKS

Rejections under 35 USC 102

The Examiner rejected claims 1 through 10 and 12 through 19 as being anticipated by Published Application US 2002/0176936 to Matsuyama (hereinafter the '936 publication). The Examiner additionally rejected claims 1 through 7, 10, 12 through 15 and 16 through 20 as being anticipated by US Patent 5,919,520 to Tateyama et al. (hereinafter the '520 patent). In her notes to the Advisory Action, the Examiner indicates that (1) the claimed invention does not exclude the use of the control fluid supply to be in liquid form as taught by the '520 patent, and (2) that in any event, the '936 publication teaches a control fluid supply in gaseous form. These remarks are addressed *in seriatim*.

Regarding the Examiner's position that the control fluid supply claim recitations do not preclude the use of liquid control fluids, independent claims 1, 5, 14 and 16 are presently amended to expressly recite that the control fluid imparted to a portion of the deposited resist be of a gaseous nature. Independent claim 20 originally recited (and continues to recite) that an airflow supply causes air to impinge onto the deposited resist to produce a localized change in evaporation rate of the deposited resist. Support for the gaseous nature of the control fluid of the amended claims comes from various passages in the original specification. For example, page 3, lines 25 through 27 describes the control fluid as preferably an air source or inert gas, the latter such as nitrogen, argon or the like that, according to page 6, lines 7 through 8, is applied to a portion of the deposited resist to "effect a local thickness change through modification of the evaporation rate of the solvent in the resist". The original specification further states at page 5, lines 6 through 7 that the "control fluid coming out of the fluid supply can be air or another gas", while page 5, lines 17 through 21 states that the control fluid is "an airflow supply fluidly coupled to the resist that has been deposited onto a generally upper surface of the wafer chuck such that upon impingement of the airflow onto an desired part of the resist, the airflow produces a localized change in evaporation rate of the deposited resist relative to portions of the resist that are not substantially exposed to the impingement". Furthermore, page 11, lines 17 through 20 indicates that in "one preferred form, air is the control fluid, although it will be appreciated that

other control fluids can be used besides air" and that "substantially inert gases (such as argon, nitrogen or the like) could be used in situations where contaminants in the air, or the air's inherent reactivity due to its substantial oxygen presence, may preclude its use."

The Examiner considers the solvent (which is commonly used in many prior art devices) to teach the recited control fluid of the independent claims. Equipment used to supply the solvent is shown in FIG. 7 of the '936 publication and FIG. 2 of the '520 patent, and in both cases is described as performing its conventional function, *viz.* to improve wettability of the resist layer that is being deposited. As stated in the original specification as well as his previous response, the Applicant never considered the solvent or its intended use to be the equivalent of the present gaseous control fluid, instead (as stated above in the recited passages of the original specification) to improve resist thickness uniformity, such as through the modification of the evaporation rate of the solvent in the resist. Moreover, there is nothing to even remotely suggest that the solvents used in the '936 publication and the '520 patent function as the gaseous control fluid of amended independent claims 1, 5, 14 and 16 or the airflow of original independent claim 20. Furthermore, the description in the specification indicating that it is the solvent layer that is operated upon by the control fluid means that by logical construct, there can be no similarity between the recited control fluid and the solvent of the '520 patent and the '936 publication. More particularly, by amending the independent claims 1, 5, 14 and 16 to recite that the control fluid is gaseous (i.e., not liquid), the Applicant more precisely recites its nature, and creates an even more clear line of demarcation between it and the solvent of the '520 patent that only employs a liquid control fluid.

Regarding the Examiner's position that the '936 publication teaches a control fluid supply in gaseous form, the Applicant respectfully draws the Examiner's attention to numerous locations in the '936 publication that discuss a gas (preferably taught as being nitrogen in FIG. 4) being used to carry a control fluid in the form of a mist. In particular, paragraphs [0046] through [0048] of the '936 publication discuss a "solvent mist" that is used to keep the viscosity of the deposited resist coating low. Paragraph [0066] makes it clear that the supposed control fluid of the '936 publication is in fact way to replenish solvent lost from the deposited resist.

Importantly, in paragraph [0014], the inventor thereof clearly indicates a preference for mists relative to gases, stating that "since the solvent in a mist state is supplied, it is possible to supply a larger amount of the solvent to the substrate in a shorter time compared with a case when vapor of the solvent is supplied." That the control fluid in mist form cooperates with a gaseous carrier is of no consequence, as it is only the mist/liquid portion (made up of a solvent) that performs any of the supposed control fluid functions. By contrast, it is precisely the gaseous nature of the control fluid of the present invention that gives the claimed device its ability to produce a relatively uniform deposited resist layer. The overwhelming teaching provided by the '936 publication is that to the extent a control fluid is provided, it is done so as a mist, which is clearly a liquid, and that to the extent there is a gaseous flow present, it is not such flow that imparts the desired changes to the deposited layer. As such, original independent claim 20, as well as amended independent claims 1, 5, 14 and 16, by virtue of their recitation that the control fluid is an "airflow" (claim 20) or "gaseous" (claims 1, 5, 14 and 16) as a way to change local evaporation rates of the deposited resist layer, are patentably distinguishable over the '936 publication, as each and every positively recited limitation is not disclosed or suggested in that reference.

Because the hallmark of a valid anticipatory rejection under MPEP 2131 is that every claim limitation must be taught or suggested, and neither the '520 patent nor the '936 publication satisfies such requirement, the Applicant respectfully submits that the present rejection under 35 USC 102 be withdrawn.

Rejections under 35 USC 103

The Examiner rejected claim 11 as being obvious over the '936 publication in view of US Patent 7,077,910 (hereinafter the '910 patent). The Examiner additionally rejected claims 8 and 9 as being obvious over the '520 patent in view of the '936 publication. By virtue of the present amendment to the independent claim 5 from which claims 8, 9 and 11 depend, as well as the remarks made above in conjunction with the anticipatory rejections, the Applicant respectfully submits that the present obviousness rejections must also be withdrawn.

As discussed in MPEP 2143.03, one of the requirements to establish a *prima facie* case of obviousness under MPEP 2143 is that all of the claim limitations must be taught or suggested. As discussed above in conjunction with the rejection under 35 USC 102, there is nothing in either of the '520 patent or the '936 publication to teach or suggest a gaseous control fluid being supplied to a layer of deposited resist coating in order to control a localized rate of evaporation of the resist. Recourse to the '910 patent, which teaches a device for the linear application of a coating (for example, a plastic coating) to a device (for example, a medical device) is unavailing, as there is nothing in it to remedy the deficiencies of the '520 patent and the '936 application. Significantly, the '910 patent is silent as to use for deposited resist layers, instead teaching at most using a gas to purge a coating chamber or to provide humidity or temperature control within the entire chamber. In addition, the introduction of the gas is global (i.e., within the substantial entirety of the coating chamber) rather than to a discrete location on the item being coated.

Another requirement to establish a *prima facie* case of obviousness under MPEP 2143 is that there must be some motivation to combine the references. MPEP 2143.01. By being entirely silent as to comprising part of a gaseous control fluid supply that provides a localized change in resist layer evaporation rate, no combination of the '520 patent, the '936 publication and the '910 patent provides the evidence necessary to enable the Examiner to discharge her burden to establish motivation as an indispensable part of a *prima facie* case of obviousness. See, *In re Lee*, 61 USPQ2d 1430 (Fed. Cir. 2002). As with the *Lee* case, there is simply no suggestion or motivation to be found in any of the cited references. Thus, even if all of the claimed limitations were taught or suggested (which, for reasons discussed above, they are not), because the references relied upon in the present rejection fail to provide the necessary motivation, their combination is inappropriate.

Thus, since there is nothing in any of the cited references that teaches or suggests all of the features of the present independent claim 5 (most notably, the supply of gaseous control fluid as discussed above), and because there is nothing in the cited references that would suggest to one of ordinary skill in the art to combine them in the way recited in the claims, a *prima facie* case for obviousness can not be made out for claims 8, 9 and 11.

For all of the above reasons, the Applicant respectfully submits that the present rejection has been overcome, and that a finding of allowability by the Examiner as to all of the present claims be issued forthright. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,

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